

REMARKS

Claims 85, 91-98 and 104 are amended. Claims 109-117 are cancelled. Claims 85-108 and 118 are pending in the application.

Claims 85-103 stand rejected under 35 U.S.C. § 102(b) as being anticipated by, or alternatively under 35 U.S.C. § 103(a) as being obvious over Hartig, U.S. Patent No. 5,403,458. The Examiner is reminded by direction to MPEP § 2131 that anticipation requires each and every element of a claim to be disclosed in a single prior art reference. The Examiner is further reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 85-103 are allowable over Hartig for at least the reason that Hartig fails to disclose or suggest each and every limitation in any of those claims.

As amended independent claim 85 recites a sputtering target comprising Zr and one or more elements selected from the group consisting of Ba, Be, Ca, Ce, Co, Cs, Dy, Er, Fe, Gd, Ho, La, Mg, Mn, Mo, Nd, Pr, Sc, Sm, Sr, V, W, and Yb, where Zr is the majority element of the target. Hartig discloses a cathode target having a coating component and a dopant component, the coating component preferably being the majority component and which can be zirconium. Hartig discloses that the dopant component can be selected from the group consisting of nickel, palladium, chromium, hafnium, titanium, and zirconium. Hartig does not disclose or suggest the claim 85 recited zirconium comprising sputtering target having one or more elements selected from the recited group. Accordingly, independent claim 85 is not anticipated by or rendered obvious by Hartig and is allowable

over this reference.

Dependent claims 91-96 are amended to properly depend from claim 85. Dependent claim 97 is amended to recite the target of claim 85 further comprising one or more of Al, B, Hf, Nb, Ni, Ta, Y and Ti. The amendment to claim 97 is supported by the specification at, for example, page 5, lines 9-12; page 7, lines 13-18; page 9, line 29 through page 30, line 3; page 13, lines 18-21; and page 13, lines 24-27. Dependent claims 86-97 are allowable over Hartig for at least the reason that they depend from allowable base claim 85.

As amended, independent claim 98 recites a sputtering target consisting essentially of a material having a purity of at least 99.95% by weight, and comprising zirconium and titanium with zirconium being present to a concentration of at least 55%. Hartig does not disclose or suggest the claim 98 recited sputtering target consisting essentially of a zirconium and titanium comprising material having a purity of at least 99.95%. Accordingly, independent claim 98 is not anticipated by or rendered obvious by Hartig and is allowable over this reference.

Dependent claims 99-103 are allowable over Hartig for at least the reason that they depend from allowable base claim 98.

Claims 85-87 and 91-92 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Makino, U.S. Patent No. 5,209,835. Makino discloses formation of oxide films containing at least one of Zr, Ti, Hf, Sn, Ta and In and also containing at least one of B and Si (col. 2, ll. 10-24; and col. 4, ll. 10-16). Makino further discloses that the film can be formed utilizing a non-oxide target, and specifically sets forth numerous zirconium targets (col. 4, ll. 35-49) and content ranges for zirconium-boron targets (col. 4, ll. 65

through col. 5, ll. 1 and tables 1 and 2). Additionally, Makino discloses specific target compositions of titanium targets comprising titanium and silicon (tables 1 and 2). Makino does not disclose or suggest the claim 98 recited sputtering target consisting essentially of a material comprising zirconium and titanium having a purity of at least 99.95%. Accordingly, independent claim 98 is not anticipated by Makino and is allowable over this reference.

Dependent claims 99-103 are allowable over Makino for at least the reason that they depend from allowable base claim 98.

Claims 104-112 and 114-118 stand rejected under 35 U.S.C. § 102(b) or alternatively under 35 U.S.C. § 103 as being unpatentable over Koder, Japan Patent No. 5-255843. As amended, independent claim 104 recites a sputtering target comprising titanium and greater than 0.2% boron by weight, the titanium being the majority element of the target. Koder discloses a titanium target comprising up to 2000 ppm Si, B or Ge, by weight. Koder does not disclose or suggest the claim 104 recited titanium-comprising sputtering target containing greater than 0.2% boron by weight. Accordingly, claim 104 is not anticipated by or rendered obvious by Koder and is allowable over this reference.

Dependent claims 109-117 are cancelled. Dependent claims 105-108 and 118 are allowable over Koder for at least the reason that they depend from allowable base claim 104.

Claims 104 and 113 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Makino. As indicated above, Makino discloses specific content ranges of elements in zirconium based targets and in targets comprising titanium and Si. Makino does not disclose or suggest the claim 104 specifically recited target having Ti as the majority

element and comprising boron. Additionally, Makino fails to disclose or suggest the recited boron content of greater than 0.2% by weight. Accordingly, independent claim 104 is not rendered obvious by Makino and is allowable over this reference. Dependent claim 113 is allowable over Makino for at least the reason that it depends from allowable base claim 104.

For the reasons discussed above, claims 85-108 and 118 are allowable. Accordingly, applicant respectfully requests formal allowance of pending claims 85-108 and 118 in the Examiner's next action.

Respectfully submitted,

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By:

Jennifer J. Taylor

Jennifer J. Taylor, Ph.D.

Reg. No: 48,711